

## USER MANUAL



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# Universal DiSEqC controller

Dear customer,

If you have not been able to put the system into operation or have problems installing it, call the Technical Assistance phone as indicated on the first and the last pages, or write to us at [support@sat-control.si](mailto:support@sat-control.si). We will be pleased to provide you with further information.

If you have installed the system to your satisfaction, we congratulate you.

Your manufacturer.  
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Made in EU (Slovenia)

# Universal DiSEqC controller

## 1. INTRODUCTION

Satellite television is one of most favourite and popular medium in today's world. But reception 36.000 km away from the sky is more technically difficult. Every user must have accurate setted dish with high-tech reception block and additionally complicated devices for pointing many satellites and splitting signal for more users.

In the earlier years of satellite TV DiSEqC (Digital Satellite Equipment Control) protocol was invented due to commanding between master device and all slave peripheries.

DiSEqC protocol uses 22 kHz signal modulated with digital PWK (pulse wide keying) and like that it can be transmitted by the same coax cable like satellite signal and DC supply voltage. With these principe master device can command all other devices connected on the same cable in a multi-drop mode, real time.

Every technician who work on development or service for satellite devices have a need for some measurement equipment with DiSEqC generating strings. And this need is introduced in this script like Universal DiSEqC controller. Equipment is generator of DiSEqC strings as they are presented in original Eutelsat's document with additional manual entry and some special functions.



## 6.3. SPECIAL

- This menu is NOT by DiSEqC specification. Its purpose is to setup polar-mount motors made by Sat-Control d.o.o.
- It also uses PWK modulation on the same base frequency but string content is totally different, communication with motor is two-way and fully secured from data collision to achieve the best regularly transmission. Menu allow user to get into motor's software and setup its settings and on-line check behaviour of the motor. That option is best way to control a motor and its working.

### Adjust 0 degrees\_1

- Submenu can adjust motor scale of degrees by setting its zero degrees. If the motor is not accurate when you are pointing it with GotoX degrees, you must adjust it in this submenu. By moving number E or W and pressing enter, motor will do the move. Command for shift and command for goto zero degrees will be sent to the motor and motor will move to its new zero position. If new zero position equal to real zero, motor is adjusted. Otherwise repeat unless you get real zero degrees.

- Note: for versions of motors without LED – light emitting diode by F-connectors

### Adjust 0 degrees\_2

- Submenu has the same purpose like upper submenu, but it works in two-way communications. When enter in this submenu, equipment will get current value of zero factor from the motor. Now you can change it as you want and press enter to send it in the motor. Motor will than move to its new zero position. If new zero position equal to real zero, motor is adjusted. Otherwise repeat unless you get real zero degrees. You can get current zero factor anytime you want by pressing "2nd function" button.

- Note: for versions of motors without LED – light emitting diode by F-connectors

### Read eeprom

- This command will read value from internal storage place. There motor have stored locations for all 50 satellites (used when you are driving motor by location and NOT used when you are using degree commanding). Eeprom also has stored some system parameters that can be checked (please refer to technical script of motor SM3D22).

- Set wanted eeprom address and press enter. Motor will give you reply of current value of address.

### Write eeprom

- In this submenu values stored in eeprom can be changed
- Attention!!! Do not change values unless you know what you are doing. Changing values can cause inaccuracy of the motor (please refer to technical script of motor SM3D22).
- Enter address of eeprom to be changed and press enter. Enter new value in HEX format and press enter again. New value is written.

## 3. GENERAL PRECAUTIONS

- o Universal DiSEqC Controller is low-voltage device. Do not connect it to some high voltage.
- o Use checked cables for connections
- o For cleaning its housing use soft and not aggressive liquids.
- o Do not leave it on the sun or by any source of heat.
- o Do not expose to any moisture or rain.
- o Do not use it at low temperatures below 0°C or high temperatures above 50°C.
- o Strokes and shocks can damage the device. Avoid device from falling down to the hard floor.
- o It is not recommended to repair it by yourself. Contact your supplier if anything is wrong with the device.

## 4. CONNECTIONS ON UNIVERSAL DISEQC CONTROLLER

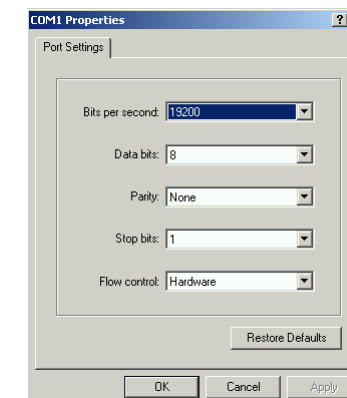
### 4.1. F-CONNECTORS

- Upper side has two F-connectors for connecting equipment to DiSEqC measure device. Any sent DiSEqC string will go out on these two connectors. Also DiSEqC reply will be received here (if two-way DiSEqC communication is used).
- Both F-connectors are shorted for signal and DC supply and are totally equal. One connector can be connected to i.e. motor, LNB, switcher and other can be used for purposes like signal meter, analysers... etc.

### 4.2. RS232 PORT

Beside F-connector there is RS232 port for connection to PC. Any received DiSEqC string will be sent also to RS232 port and can be seen on any terminal program on PC. Use extension COM cable for connecting (DB9 Female → DB9 Male, 2→2, 3→3, 5→5). Recommended program on PC is HyperTerminal (included in almost all Windows environments).

Set configuration of program to:





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## Read ram

- This option can read internal working ram values. If you don't know meaning of addresses this submenu is unusable for you (please refer to technical script of motor SM3D22). Set wanted ram address and press enter. Motor will give you reply of current value of address.

## Set mode

- Motors from Sat-Control can work in different options. Setting its mode can change working of motor as described in table below.

## 7. ENERGY SUPPLY

- Equipment has its own battery inside (Ni-Cd 12V, 600mAh). It is enough to drive satellite polar-mount motor for few hours non-stop. When battery is low, indicator will light red (can be adjusted with inside trimmer resistor). When external charger is connected, charger will charging battery disconnected from equipment, but equipment will be supplied by charger.

- Battery will be charged with constant current of cca. 60mA – that method is recommended for Ni-Cd battery. When charging, LED indicator will constantly lighting green and stop to light when charging is terminated. Termination method for charging is voltage level. When battery voltage will reach pre-defined voltage level, charging will be finished (termination voltage level can be adjusted with inside trimmer resistor). Aware that charging must not exceed 14 hours.

## 8. RECEPTION OF DISEQC STRING

- Universal DiSEqC controller is two-way DiSEqC device. It can send and receive DiSEqC strings. When use it as DiSEqC monitor, normally connect it with measure device i.e. satellite receiver and you will be able to see receiver's output strings on second line of LCD. Only thing to be noted here is output voltage of measured device – must be as close as Universal DiSEqC controller have it (that is 18V). All received string will be sent through RS232 COM port to PC for logging purpose.

## 5. CHARGER PLUG

Use this plug to charge internal battery. See chapter "Energy supply". Charger's voltage is around 17V.

## 6. STRUCTURE OF MENU

### 6.1. COMMAND

- This menu contains the most useful DiSEqC commands for driving motor and signal switchers. For more detailed description of these commands please see Eutelsat's DiSEqC bus specification.

#### Goto degrees

- Send commands for driving polar-mount motor to wanted degrees. Motor will turn to relative angle. If you are pointing satellite, geometrical calculation according to your geo. position must be done. This submenu is suitable for GotoX, Usals controlling of motor.
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

#### Goto location

- Send commands for calling stored satellite location. Motor will move a dish to stored location that belongs to called number. Location is stored in motor.
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

#### Store location

- When satellite is pointed and signal is on maximum, with this command you can store location of dish to some location number. Note: receiver should call that number to get stored satellite (controlling motor by location).
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

#### Stop motor

- Send command for unconditional stop.
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

### Drive east

- Command will move a polar-mount motor to east direction for defined number of impulses. What angle it will be, it depends on resolution of the motor.
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

### Drive west

- Command will move a polar-mount motor to west direction for defined number of impulses. What angle will that be it depends on resolution of the motor.
- *Note: Default frame byte is 0xE0 and address byte is 0x31 for motors as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

### Switch commutative

- Send commands for DiSEqC 1.0 switchers. Signal switcher will switch HF connection to the selected input. Usually this type supports maximum four inputs.
- *Note: Default frame byte is 0xE0 and address byte is 0x10 for switchers as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

### Switch uncommutative

- Send commands for DiSEqC 1.1 switchers. Function is the same like in commutative switchers, but number of inputs is extended to max. 16 (some application have 32 – in combination with commands from "Switch commutative" menu).
- *Note: Default frame byte is 0xE0 and address byte is 0x10 for switchers as refer in original DiSEqC specifications. With button "2nd function" this two bytes can be changed – but aware that this can cause unworking of DiSEqC devices !!*

### 6.2. MANUAL

- This menu is suitable for manual entry of DiSEqC command. You can put into line any bytes you want; the only restriction is that number of bytes must be greater than 3 bytes and smaller than 7 bytes. Also half of byte is not allowed. Than entered string will be send. Device will not check if string is in DiSEqC specification or not.
- Press button "◀" to clear display.